Giovanni - The Bridge Between Data and Science
An Online Visualization and Analysis Tool

Objective:

Learn to access and use Giovanni, a MODIS Level 3 aerosol data product and an online visualization and analysis tool.

There are two parts to this exercise:
1. Time Averaged Maps
2. Time Series Area Averaged

Part 1: Time Averaged Maps

1. Go to the Giovanni-4 website: http://giovanni.gsfc.nasa.gov/giovanni/

2. Under the **Select Plot** section, set **Maps** to **Time Averaged Map**

3. Select your date range.
   a. For this exercise, select *April 04-14, 2014*

4. Select your region either by typing in coordinates or by clicking the Show Map button and drawing a box around your area of interest.
   a. For this exercise, use the coordinates: 71.7188, -4.9219, -79.4531, 62.5781 or draw a box that covers China, the Pacific Ocean, and the Western U.S.

5. Select Variables
   a. For this exercise, under **Disciplines** select **Aerosols**
   b. Then select **Aerosol Optical Depth 550nm (Dark Target) (MOD08_D3_v6)**; MODIS-Terra; Daily

6. Click on **Plot Data**

7. Scroll down to view the various maps. You can change the color scale, max, and min under the **Options** button on the top right of each map. You can download each image (either as a .png or a GeoTIFF) under the Image button

8. In the panel on the left, under the **Time Averaged Map** section, click the **Downloads** link. Here you can download the maps in .png or GeoTIFF, or download the data in NetCDF format.

9. Click the **Back to Data Selection** button on the lower right of the page.

Questions

1. Describe the aerosol maps created using the Giovanni exercise.

2. Find the maximum Aerosol Optical Depth reported on the map.

3. What other information from the satellite data can help us to confirm aerosol type (e.g. dust)?

Part 2: Time Series Area Averaged

1. Under **Select Plot**, set **Time Series** to **Area-Averaged**

2. Go to **Temporal Resolutions** and select **Monthly**

3. Go to **Measurement** and select **Aerosol Optical Depth**

4. Select Variables
    a. For this exercise, select **Combined Dark Target and Deep Blue AOD at 0.55 micron for land and ocean: Mean of Daily Mean (MYD08_M3_v6)**

5. Select Data Range
    a. For this exercise, select July 2003 to June 2012

6. Select geographic region of about 5x5 degree box around your area of interest (i.e. your city or country)

7. Click on **Plot Data**

8. Scroll down to view the various charts. You can download each image (either as a .png or GeoTIFF) under the  button

9. In the panel on the left, under **Time Series, Area Averaged**, click the **Downloads** link. Here you can download the charts as .png format, or the data in ASCII SCV format.

Questions

1. Explain the observed trend in aerosols over your location.

2. Do you have any prior knowledge about the observed trends in aerosols in your region? How can you verify them using an independent data set?

3. Explain the seasonable variability (if it exists) in the observed trend.